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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.        | CONFIRMATION NO. |
|---|-------------|----------------------|----------------------------|------------------|
| 10/675,568  | 09/30/2003  | Timothy J. Daniel    | BUCKFELLER 17-4-2-4        | 9978             |
| 47396   | 7590        | 08/03/2009           |                            |                  |
| HITT GAINES, PC<br>LSI Corporation<br>PO BOX 832570<br>RICHARDSON, TX 75083 |             |                      | EXAMINER<br>MOORE, KARLA A |                  |
|   |             |                      | ART UNIT                   | PAPER NUMBER     |
|   |             |                      | 1792                       |                  |
|   |             |                      | NOTIFICATION DATE          | DELIVERY MODE    |
|   |             |                      | 08/03/2009 ELECTRONIC      |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@hittgaines.com

### Office Action Summary

**Application No.**

10/675,568

**Applicant(s)**

DANIEL ET AL.

**Examiner**

KARLA MOORE

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3, 4, 8, 9 and 14 is/are pending in the application.
- 4a) Of the above claim(s) 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 8 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. **Claims 1, 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,903,428 to Grimard et al. in view of U.S. Patent No.**

**6,944,006 to Zheng et al. and U.S. Patent No. 5,431,737 to Keller et al.**

8. Grimard et al. disclose a physical vapor deposition (PVD) chamber for depositing material on a wafer, substantially as claimed and comprising: a chuck (Figure 1, 104); and a cover comprising a first portion (center elevated portion) and a second portion (circumscribing outer portion, wherein the first portion included a planar top surface (110) with a plurality of pads (106) contactable with a planar backside of the wafer during material deposition on the wafer in the physical vapor deposition chamber and a chuck cavity on a side opposite the top planar surface for receiving the chuck therein, and wherein a surface of the second portion is parallel to and located below the top planar surface of the first portion.

9. However, Grimard et al. fail to disclose the surface of the second portion includes a peripheral circumferential groove wherein a circumference of the wafer when positioned on the cover extends radially inwardly of an inner sidewall of the groove.

10. Zheng et al. disclose the provision of a peripheral circumferential groove (Figure 3, 275) in a circumscribing outer portion of a pedestal cover (multiple part numbers, e.g., 205,235) wherein a circumference of a wafer when positioned on the pedestal cover extends radially inwardly of an inner sidewall of the groove for the purpose of collecting deposition byproducts (column 3, rows 49-51).

11. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a peripheral circumferential groove in

a circumscribing outer portion of the pedestal wherein a circumference of a wafer when positioned on the pedestal cover extends radially inwardly of an inner sidewall of the groove in Grimard et al. in order to collect deposition byproducts as taught by Zheng et al.

12. As pointed out above, Grimard et al. disclose the chamber substantially as claimed.

13. However, Grimard et al. fail to disclose the cover as a removable, detachable slip cover.

14. Keller et al. teach that by providing a removable, detachable pedestal slip cover excessive coating on surfaces in a deposition chamber other than substrate surfaces can be substantially removed periodically by venting the chamber and replacing the cover (abstract).

15. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the cover in Grimard et al. as a removable, detachable pedestal slip cover such that excessive coating on surfaces in the deposition chamber other than substrate surfaces could be substantially removed periodically by venting the chamber and replacing the cover as taught by Keller et al.

16. With respect to claim 4, according to Zheng et al. the groove may have dimensions wherein the ratio of the width of the trench to the height of the trench is from about 2.4 to 4.4, which corresponds to a width greater than a depth (column 3,

rows 49-65) . Further, it would be obvious to one of ordinary skill in the art to choose specific dimensions for the groove based on optimizing the task it is provided for—collection of deposition byproducts. Therefore, it is also noted that the courts have ruled that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).d n

17. With respect to claim 9, Examiner notes that the limitations are drawn to a method of using the apparatus and the courts have ruled that a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). However, Examiner also notes that both Zheng et al. and Keller et al. also teach these method limitations at column 4, rows 17-19.)

18. **Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grimard et al., Zheng et al. and Keller et al. as applied to claims 1, 4 and 9 above, and further in view of Applicant’s Admitted prior art (AAPA).**

19. Grimard et al., Zheng et al and Keller et al. disclose the invention substantially as claimed and as described above.

20. However, Xu Grimard et al., Zheng et al and Keller et al. fail to teach an aluminum deposition target.

21. AAPA teaches that aluminum targets are conventionally used in integrated circuit device manufacture (paragraphs 4-6 of specification).

22. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an aluminum deposition target in Grimard et al., Zheng et al and Keller et al. in order to perform integrated circuit device manufacture as is conventionally done as taught in the admitted prior art.

**23. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable Grimard et al., Zheng et al and Keller et al. as applied to claims 1, 4 and 9 above, and further in view of U.S. Patent No. 5,656,093 to Burkhart et al.**

24. Grimard et al., Zheng et al and Keller et al. disclose the invention substantially as claimed and as described above.

25. However, while Xu et al. do teach that the pads of the pedestal cover may comprise a conducting metallic material (column 7, rows 7-13), stainless steel is not explicitly taught as the conducting material.

26. Burkhart et al. teach the use of stainless steel as a material for conducting pads of a pedestal cover for the purpose of using a material having superior contact properties (column 2, rows 15-20).

27. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the pedestal cover/pads comprising stainless steel in Xu et al., Frankel, Patadia et al. and Hanamachi et al. in order to use a material with superior contact properties as taught by Burkhart et al.

**28. Claims 1, 3-4 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of U.S. Patent No. 6,944,006 to Zheng et al.**

29. AAPA discloses a physical vapor deposition (PVD) chamber for depositing material on a wafer, substantially as claimed and comprising: a chuck (Figure 7, 126); and a removable, detachable pedestal slip cover comprising a first portion (area within circumference of wafer 106) and a second portion (area outside of wafer circumference), wherein the first portion includes a top planar surface (tops of pads) with a plurality of pads contactable with a planar backside of a wafer (106) during material deposition on the wafer in the physical vapor deposition chamber and a chuck cavity (at 129) on a side opposite the top planar surface for receiving the chuck therein; and wherein a surface of the second portion is parallel to and located below the top planar surface of the first portion. Also see paragraphs 38 and 39 of the specification.

30. However, AAPA fails to disclose the surface of the second portion includes a peripheral circumferential groove wherein a circumference of the wafer when positioned on the cover extends radially inwardly of an inner sidewall of the groove.

31. Zheng et al. disclose the provision of a peripheral circumferential groove (Figure 3, 275) in a circumscribing outer portion of a pedestal cover (multiple part numbers, e.g., 205,235) wherein a circumference of a wafer when positioned on the pedestal cover extends radially inwardly of an inner sidewall of the groove for the purpose of collecting deposition byproducts (column 3, rows 49-51).



32. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a peripheral circumferential groove in a circumscribing outer portion of the pedestal wherein a circumference of a wafer when positioned on the pedestal cover extends radially inwardly of an inner sidewall of the groove in AAPA in order to collect deposition byproducts as taught by Zheng et al.

33. With respect to claim 3, the chamber may further comprise an aluminum target for depositing aluminum on the wafer (see, e.g., 102 in Figures 1 and 2).

34. With respect to claim 4, according to Zheng et al. the groove may have dimensions wherein the ratio of the width of the trench to the height of the trench is from about 2.4 to 4.4, which corresponds to a width greater than a depth (column 3, rows 49-65). Further, it would be obvious to one of ordinary skill in the art to choose specific dimensions for the groove based on optimizing the task it is provided for—collection of deposition byproducts. Therefore, it is also noted that the courts have ruled that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

35. With respect to claims 8 and 9, AAPA teaches that it is known and conventional to provide the stainless steel replacement chamber parts, such as the pedestal cover of the claimed invention. These replacement chamber parts may be cleaned after the material from a material deposition process is deposited thereon. See, e.g., paragraph 43 of the specification.

### ***Response to Arguments***

34. Applicant's arguments with respect to claims 1, 3-4 and 8-9 have been considered but are moot in view of the new ground(s) of rejection. While the above rejections are modified, they are similar to the previous rejections. For example, the above rejections of the claimed invention clearly show that each of the "key" features of the claimed invention is known, as is the requisite motivation for their provision in a deposition apparatus, and therefore would have been obviously combinable by one of ordinary skill in the art exercising ordinary common sense, creativity and logic into a single deposition apparatus. Also, it is worth noting that the primary reason for the reliance on different references is based on the "confusion" in Applicant's latest submission. The presently relied upon "new prior art" even more clearly shows the obviousness of the claimed invention. That is to say, one of ordinary skill in the art would need to use less creativity, common sense and logic to envision the claimed invention.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARLA MOORE whose telephone number is (571)272-1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Karla Moore/

Primary Examiner, Art Unit 1792